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AUTHOR Jacobson, Marc E.
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ABSTRACT

Phonological data of 30 Philippine languages are presented. The languages were selected as representative of 12 minor families within the Philippine group. The data is charted for easy comparison between language families and between individual languages. The research method consists of gathering data from journal articles and unpublished phonological reports prepared by members of the Summer Institute of Linguistics. Materials were written between 1953 and 1977. Each of the languages was then charted and a questionnaire was sent out to a linguist who is currently working in the language. The questionnaire probed notable ommissions in the phonology of the language apparent when comparison was made with other languages in its family. The revised data are presented in three charts, the first of which presents stop and affricate phonemes and their allophones and lists the language family name. Chart two presents fricative, liquid, nasal, and semivowel phonemes and their allophones. Chart three gives vowel and supersegmental phonemes and their allophones. Areas for further research are briefly considered. The questionnaire and list of contributing linguists and a technical description of phone symbols are appended. A bibliography is included. (SW)

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PHONES IN PHILIPPINE LANGUAGES

Marc R. Jacobson
Summer Institute of Linguistics
Philippine Branch

CONTENTS

1. Introduction
2. Explanation of Chart Use
3. General Observations: Strong and Weak Phones
4. Chart One and Discussion -- Stop and Affricate Phonemes
5. Chart Two and Discussion -- Fricative, Liquid, Nasal, and Semi-vowel Phonemes
6. Chart Three and Discussion -- Vowel and Super-segmental Phonemes
7. Areas for Further Research -- Historical Processes
Appendix A: Questionaire and List of Contributing Linguists
Appendix B: Technical Description of Phone Symbols
Bibliography

1. Introduction

The purpose of this paper is to make the phonological data of thirty Philippine languages available to the linguistic community. The languages were selected as representative of twelve minor families within the Philippine group. The data has been charted for easy comparison between language families and between individual languages. It is not the intention of this paper to make any claims for a particular historical process by which the present diversity came into being. It is hoped that the data contained in this paper will prove useful to the beginning student of Philippine languages as well as to the professional linguist.

The method of research consisted of gathering data from journal articles and unpublished phonological reports prepared by members of the Summer Institute of Linguistics. These articles and reports were written between 1953 and 1977. Each of the languages was then charted and a questionaire sent out to a linguist who is currently working in the language. (Appendix A gives a sample of the questionaire, and lists the names of the contributors.) The questionaire probed notable ommissions in the phonology of the language apparent when comparison was made with other languages in its family. The questionaire also attempted to regularize the data to a common level of phonetic distinction for all languages so that comparison would be as reliable as possible.

The revised data have been given in three charts. Chart One presents stop and affricate phonemes and their allophones. It also lists the language family names as they appear in "A Philippine Language Tree" (Walton, 1977). Chart Two presents fricative, liquid, nasal, and

FL011 124

semi-vowel phonemes and their allophones. Chart Three gives vowel and super-segmental phonemes and their allophones.

It should be noted that the phones in these charts are not in any "logical" phonetic order. Rather, they have been ordered so as to highlight the systematic features of Philippine phonologies. For example, the voiced alveolar flap, [ř], has been placed between the voiced bilabial and velar fricatives, [ƀ] and [ɠ], since these three phones often form "allophonic partners" with the voiced stops, [b], [d], and [g]. All of these phones appear on Chart One because systematically they are part of the stop phonemes in most languages where they occur. In two languages, [ƀ] and [ɠ] are full phonemes, but for convenience this also appears on Chart One. [f] and [v] occur on Chart One, even though they are full phonemes in two of the languages, since in most occurrences they, too, are either allophonic variants of stop phonemes, fill the "hole" in a stop series, or are borrowed for use in trade language loan words. Only when a fricative phone functions solely as an allophone of a fricative phoneme does it appear on Chart Two.

Some phones have been listed twice, (i.e. on Chart One and Two: [x], [h], [ř], [r], [s], [ṣ] and [ɭ], see Appendix B for full description of phone symbols) [f] occurs twice on Chart One because of its dual function as an allophone of both voiceless and voiced stops.

A further limitation of the charts needs discussion, namely that the individual languages were chosen as representative of families, but that this does not imply that all members of the family have identical phonologies. One notable example of divergence within a family would be the Sama-Bajaw family as represented by Sama: Dilaut on the charts. Sama: Dilaut shows a six vowel system, but other languages in this group vary from a three (Sama: Abaknon) to a seven (Sama: Pangutaran) vowel system (Pallesen, 1977). Conclusions based on this representative sample should therefore be made with care.

It should also be mentioned that some phonetic distinctions heard by individual linguists have been lost on the charts. It did not seem wise (or feasable) to list every phone appearing in some reports since it was clear that the reports had not attempted to describe a similar level of phonetic distinction. If a report described an allophone of /i/ to be a "high, tense, lowered, front, unrounded vocoid" (i.e., [i˙]), I have taken the liberty to chart it under the [ɩ] column, especially when [ɩ] did not appear elsewhere in the analysis. Even so, it should not be assumed that the charts reflect any absolute standard of phonetic distinction, since no one linguist has confirmed how each phone in all of these languages is produced. Given, however, that the phonetic inventory is limited and that the data were gathered by as many investigators as there are languages, it is still felt that the data have value for comparative studies.

2. Explanation of Chart use.

The following is an index to symbols used on the charts. Technical names of phone symbols are given in Appendix B, which is ordered according to articulatory features.

INDEX TO CHART SYMBOLS

In this index the symbols x and y represent any phone symbol appearing on the chart. The following symbols designate phones which occur in indigenous words. (These phones may also occur in trade language loan words.)

The phone at the top of the column:

A. is the most frequent allophone (phonetic norm) of a phoneme.

1.a. (same as and) has an allophonic variant which is unreleased.

b. (same as and also) has an allophonic variant which is slightly aspirated.

2.a. (same as and) is an allophone of the phoneme whose phonetic norm is x.

b. (same as and also) is an allophone of the phoneme whose phonetic norm is y.

B. is an allophone of the phoneme whose phonetic norm is x.

C. is an allophone of the phoneme whose phonetic norm is x in certain environments, and is an allophone of the phoneme whose phonetic norm is y in other environments.

D. is a portmanteau phone which occurs in place of the cluster x and y.

E. is an allophone of the phoneme whose phonetic norm is x except in trade language loan words where it functions as a full phoneme in contrast with the phoneme whose phonetic norm is x. Phones in category E have a different function in indigenous phonology than in the trade language phonology superimposed upon it.

The following designate phones which <u>only</u> occur in trade language loan words.

<u>The phone at the top of the column</u>:

A. is the most frequent allophone (phonetic norm) of a phoneme.

B. is an allophone of the phoneme whose phonetic norm is x.

It might be helpful to clarify the use of this index by applying it to one of the languages. If we look at Chart One the index tells us that for Isnag, the stop phonemes are /p/, /t/, /k/, /ʔ/, /b/, /d/, /g/ and /ř/. Both voiced and voiceless stops have two allophones each, namely a released (but unaspirated) variant and an unreleased variant. /g/ has, in addition, the allophone [h]; however, in trade language loan words, [g] and [h] are in contrast. Therefore, in such borrowed words, /h/ must be considered a distinct phoneme. The /ř/ phoneme has two allophones, [ř] and [r̃]. Lastly, /tš/ and /dž/ have phonemic status only in trade language loan words. These two phones (and phonemes) do not occur in indigenous words.

3. General Observations: Strong and Weak Phones.

There seems to be a clear distinction between phones which occur in all or nearly all languages on the charts and those which occur in fewer than half of the languages. The first group may be called strong phones and the second group, weak phones.

Strong phones include the voiceless stop series [p], [t], and [k], which occur in all languages. The exception is [p] which is replaced by [ɸ] or [f] in the South Mindinaoan family. There is some variation on whether the phonetic norm of /k/ is velar or back-velar, [k] or [ḳ]. ([k] occurs 23 times and is the phonetic norm for 17 languages. [ḳ] occurs 18 times and is the phonetic norm for 14 languages). One language, Ibaloi, has phonemic contrast between these two. The glottal stop [ˀ] is likewise strong, having phonemic status in all languages. The voiced stops, [b], [d], and [g], are even more uniform, only showing variation between velar and back-velar pronunciation. ([g] occurs in 28 languages, [ɡ] in 10).

The voiced alveolar flap, [ɾ], is not quite as strong as the stops since it has phonemic status in only twenty of the thirty languages. Nevertheless, it occurs in all but three languages (omitted from the Nuclear and Central Cordilleran families). It is frequently an allophone of /d/ and once of /l/.

The voiceless alveolar fricative, [s] is quite strong, having phonemic status in all but one language. It does not occur in Ifugao: Batad and carries the dual function of being an allophone to /t/ and a trade language phoneme in Kallahan: Keley-I. The voiceless pharyngeal (glottal) fricative, [h] is less strong, being omitted altogether from five languages and

serving only as a trade language phoneme in another six. In three, it is an allophonic variant of /s/, in one of /ḳ/, in one of /g/, and in one of /ř/.

The voiced alveolar lateral, [ɫ], is very strong, occurring in all languages with a variety of allophones.

The nasal series, [m], [n], and [ŋ], also occurs in all languages, as do the semivowels [w] and [y]. Again the only variation concerns the phonetic norm of the velar nasal, /ŋ/, as to whether it is velar or back velar. ([ŋ] occurs in twenty-five languages, [ŋ] in twelve).

As for vowels, [i] and [a] occur in all languages and are the phonetic norms of phonemes in all but four languages. [u] occurs in all but the Palawano family and the Dumagat: Casiguran, and is the phonetic norm of a phoneme in nineteen of the thirty languages. [ɩ] as an allophone of /i/ and [ʊ] as an allophone of /u/ or /o/ both occur twenty-seven times; [ʌ] as an allophone of /a/ occurs eighteen times. [ʌ] also occurs once as an allophone of /ə/ and four times as the phonetic norm of a phoneme. [o] occurs as either a trade language phoneme or an allophone of an indigenous phoneme (or both) in all but one of the languages, and [e] has similar functions in all but six.

Stress as a super-segmental phoneme is found in only seventeen of the languages, and thus cannot really be considered strong.

The strong phones (those found in at least seventy-five percent of the languages) are therefore:

[t], [ʔ], [b], [d], [ɫ], [m], [n], [w], [y], [i], [a] and [unreleased variants of voiceless stops] .....100 %

[s] and [o] ..... 97 %

[p] and [g] ..... 93 %

[u], [ʊ], [ɩ] and [ř] ..... 90 %

[h] and [ŋ]..... 83 %

[e]..... 80 %

[k], [ʌ] and [unreleased variants of voiced stops]..... 77 %

The weak phones (those which occur in at least ten percent of the languages, but less than seventy-five percent) are:

[ɛ].....67 %
[dz] and [fronted alveolars]..63 %
[ḳ].....60 %
[´(phonemic stress)].....57 %
[ɔ].....53 %
[tš].....50 %
[ə].....43 %
[ŋ].....40 %
[ɨ].....37 %
[g].....33 %
[š], [f] and [: (phonemic vowel length)].....30 %
[ƀ].....27 %
[r̃], [ṛ], [ḷ], [ḡ] and [slightly aspirated variants of voiceless stops].....23 %
[ï].....20 %
[x̣], [v], [ɫ] and [ï].....17 %
[p̄] and [ë].....13 %
[ñ] and [kʰ].....10 %

All other phones occur in less than ten percent of the languages. This gives a total of thirty strong phones, thirty weak phones over ten percent, and twenty-four weak phones under ten percent.

If we look at the strong-weak difference for indigenous phonemes the picture is much clearer. The following phonemes occur in <u>all</u> Philippine languages on the charts:

/p/ (including fricatives used in the South Mindanaoan family), /t/, /k/ (whether velar or back velar), /ʔ/, /b/, /d/, /g/ (whether velar or back velar), /ɫ/, /m/, /n/, /ŋ/ (whether velar or back velar, /w/, /y/, /i/, /a/, and either /u/ or /o/.

Other indigenous phonemes are found in many but not all languages:

/s/.....93 %
/stress or vowel length/....83 %
/pepet vowel/ (either /ɨ/, /ə/, /ʌ/ or /ë/).....67 %
/ř/.....60 %
/h/.....54 %
both /u/ and /o/.....43 %
/e/.....40 %

Some phonemes have a very limited occurrence:

/dž/.....17 %
/ñ/, /ƀ/ and /ɔ/ (a third back vowel phoneme).....10 %
/tš/..... 7 %
/f/, /v/, /bƀ/, /ɫ/, /ḡ/ and /ɛ/ (a third front vowel phoneme)..... 3 %

4. Chart One and Discussion--Stop and Affricate Phonemes

The language family tree that appears at the left of Chart One was taken from Chuck Walton's paper, "A Philippine Language Tree" (1977). The only difference is in the labels applied to the top and bottom groups. Ivatan represents a group of geographically northern languages (Itbayaten, Ivatan, Babuyan) probably all of which have ties with the non-Chinese languages of Formosa. This group has therefore been labeled Formosan with a dotted arrow pointing to other likely connections.

The south has a similar extension beyond the Philippines with the Sama Bajaw family (represented by Sama: Dilaut, but consisting of more than thirty languages from the Visayas through southern Mindanao, Sabah, and into Indonesia) and the Sangir family (represented by Sangil, but which also goes south into Indonesia). It seemed best to label these groups Indonesian and indicate the other likely connections by means of a dotted arrow.

The distribution of strong phones has already been covered in section three; it, therefore, remains only to give some comments on distinctive features of the language families. The fricatives [f] and [v] are found as indigenous phonemes only in Ivatan. They function as trade language phonemes in the Visayan family through the influence of Spanish and English, and they are allophones of /p/ and /b/ respectively in Ibaloi. [f] alone is found in the South Mindanaoan languages replacing /p/ in the voiceless stop series, but no similar replacement occurs for /b/ by [v]. Agta also has a fricative phoneme /ꝑ/ but this does not function as a replacement for /p/.

A series of voiced stop allophones is found in a number of places on the chart. The Nuclear Cordilleran family has [f] or [pꝑ] as an allophone of /b/, [tš] or [dž] as an allophone of /d/, and [k_y] as an allophone of /g/. Bontoc: Eastern has a second series [f^y], [ts^y], [k^y]. Kankanay does not share this language family feature.

Two languages have part or all of an implosive series. Subanun: Sindangan and Sama: Dilaut have [bʕ] as an allophone of /b/, [dʕ] as an allophone of /d/, and Sama: Dilaut alone has the third member, [gʕ]as an allophone of /g/.

A third series is [ƀ], [ř], [ɠ] as allophones of /b/, /d/, /g/ respectively. This series is found mainly in the south with the one notable exception of Atta, a Northern Cordilleran language. Others which have this feature are Tausug, Subanun: Sindangan, Manobo: Tigwa, and Sama: Dilaut.

Affricate phonemes occur in only a few Philippine languages. The The most common is /dž/ which is found singularly in Sama: Dilaut, Tausug, and Atta. It is also found as half of a pair with /tš/ in Ivatan and Ibaloi. The /tš/--/dž/ pair is found through trade language loans in Isnag, Tagalog, and Hiligaynon. Ibaloi has a third affricate phoneme, /ƀƀ/.

Another common function of the affricate phones is a portmanteau phone produced by the juxtaposition of an alveolar stop and either /y/ or /s/. This feature is scattered through the Macro Meso Philippine families and in the Central Cordilleran family.

Phones in Phil. Languages 146

CHART ONE: STOP AND AFFRICATE PHONEMES

			p	ṯ	t	ḵ	k	ḳ	ʔ	b	d	g	ǧ	ƿ	f	x	ẋ	h	v
IPPINE	NORTHERN PHILIPPINE	FORMOSAN																	
			IVATAN																
		CORDILLERAN	ATTA	h		h	k	h							p		k		
			ISNAG															g	
			AGTA	h		h		h										ɣ	
			DUMAGAT: CASIGURAN		t		k												
			IFUGAO: BATAD																
			ILOCANO																
			KALINGA: GUINAANG																
			BALANGAO																
			BONTOC: EASTERN						k										
			KANKANAY: NORTHERN																
			KALLAHAN: KELEY-I																
			IBALOI												p	p		ḳ	ḳ	b
			PANGASINAN							ḳ t								ḳ		

PROTO PHILIPPINE

SOUTHERN PHILIPPINE

MACRO MESO PHILIPPINE

MESO PHILIPPINE

CENTRAL PHILIPPINE

INDONESIAN

SOUTHERN	KALLAHAN: KELEY-I	·		·			·		·	·	·						
	IBALOI	·		·		·	·						p	p		k	k b
	PANGASINAN	·		·			·	k t	·	·		·				k	
PALAWANO	TAGBANWA: CALAMIAN	·		·		·											
	BATAK	·		·		·	k		·	·	·	g					
VISAYAN	SAMBAL: TINA	·		·		k	·				g						
	TAGALOG	·	h	·	h	k	·	h		·	g	·			k		
	MASBATENYO	·	h	·	h	k	·	h			g						
	HILIGAYNON	·	h	·	h	k	·	h		·	g	·					
EAST MINDINAOAN	TAUSUG	·		·			·		·	·	·						
	CEBUANO	·		·		k	·		·	·	g	·					
	MANSAKA	·		·		k	·				g						
MESO MINDINAOAN	SUBANUN: SINDANGAN	·	h	·	h		·	h		·		·				k	
	BINUKID	·		·		·			·	·	·						
	MANOBO: TIGWA	·	h	·	h	· h	k		·	·	·	g					
SOUTH MINDINAOAN	BLAAN			·			·		·	·	·			p			
	TBOLI			·		·			·	·	·						
INDONESIAN	SAMA: DILAUT	·		·		·			·	·	·						
	SANGIL (SANGIRE)	·		·		·	k		·	·	·						

CHART ONE (cont.): STOP AND AFFRICATE PHONEMES

	ƀ	ř	ɡ	r̃	[ɡ̣] ṛ	ł	f	pp̄	bb̄	ts	tš	dž	s	š	k^h	$b^ʕ$	$d^ʕ$	$g^ʕ$	$ɡ^w$	p^y	f^y	$tš^y$	k^y
IVATAN				ř							k / t	g / d											
ATTA	b	d	g	ř																			
ISNAG				ř																			
AGTA																							
DUMAGAT: CASIGURAN																							
IFUGAO: BATAD												dy											
ILOCANO											ty	dy											
KALINGA: GUINAANG								b			d	d			g					b			
BALANGAO							b				d				g								
BONTOC: EASTERN							b				d				g						b	d	g
KANKANAY: NORTHERN		ł	ʔ																				
KALLAHAN: KELEY-I										d	t	d	t										
IBALOI									b														

KALLAHAN: KELEY-I										d	t	d	t											
IBALOI								b	b					tš	k					bb				
PANGASINAN		d		ř																				
TAGBANWA: CALAMIAN											ty	dy												
BATAK				ř																				
SAMBAL: TINA		d		ř		ř					ts	dy												
TAGALOG				ř																				
MASBATENYO											ty	dy												
HILIGAYNON		d			ř																			
TAUSUG	b	d	g		ř																			
CEBUANO		d									ts	ds												
MANSAKA					ř	ř																		
SUBANUN: SINDANSAN	b	d	g													b	d							
BINUKID		d																						
MANOBO: TIGWA	b	d	g																					
BLAAN		d									ty	dy												
TBOLI		d										dy												
SAMA: DILAUT	b	d	g													b	d	g						
SANGIL (SANGIRÉ)												dy												

5. Chart Two and Discussion--Fricative, Liquid, Nasal, and Semi-vowel Phonemes

The fronted alveopalatal grooved fricative, [š], is a common allophone of /s/ in the Central Philippine family, occuring in sixty-seven percent of the languages charted. The back velar nasal is also distinctive of this family, Tausug and Tagbanwa: Calamian being exceptions. A retroflexed voiced lateral, [ɻ], is found as an allophone of /l/ throughout the Southern Philippine family (43%) and fronting of alveolars ([t], [d], [s]) is found in almost all languages in the south, Binukid and Sangiré being the only exceptions.

In the north the distinctive allophones are the glottal fricative, [h], as an allophone of /s/ (50 %) and the retroflexed non-syllabic shewa [ɹ̩] which pairs with /l/ in the Nuclear and Central Cordilleran families. Kalinga is a notable exception in that it has a unique allophone which has been called the "Kalinga L". I have described it as a non-syllabic high tense central unrounded vocoid, [ʎ]. (For other descriptions, see Gieser, 1958 or Reid, 1973.) Ifugao: Batad and Kallahan: Keley-I share a flapped lateral, [ɺ], as an allophone of /l/.

Fronted alveolars are less uniform in the north, being found only in Atta, Isnag, Ilocano, Kalinga, and Balangao. Allophones of /y/ (either [ÿ] or [ž]) are found in Ifugao: Batad and Balangao.

CHART TWO: FRICATIVE, LIQUID, NASAL, AND SEMIVOWEL PHONEMES

	s	ṣ	ṣ̌	x̣	h	z	ɬ	ɬ̣	ɮ	ɮ̣	ř	[ẹ] ṛ	[ɨ] λ	m	n	ñ	ŋ	ŋ̣	[u] w	[ı] y	[ü] v̈	ž	fronted alveolars
IVATAN																ŋ n							No
ATTA																							Yes
ISNAG					g																		Yes
AGTA																							No
DUMAGAT: CASIGURAN																							No
IFUGAO: BATAD				h					ɬ			ɬ										y	No
ILOCANO			sy		s																		Yes
KALINGA: GUINAANG					s								ɬ										Yes
BALANGAO				h								ɬ									y		Yes
BONTOC: EASTERN		s										ɬ											No
KANKANAY: NORTHERN					s						ɬ	ɬ											No
KALLAHAN: KELEY-I	t								ɬ														No
IBALOI					ḳ																		No
PANGASINAN																							No

TAGBANWA: CALAMIAN			s																			Yes
BATAK																	ŋ					Yes
SAMBAL: TINA			s													ŋ						Yes
TAGALOG			s					ℓ								ŋ						Yes
MASBATENYO			s					ℓ								ŋ						Yes
HILIGAYNON			s					ℓ								ŋ						Yes
TAUSUG												ℓ										Yes
CEBUANO			s					ℓ								ŋ						Yes
MANSAKA																ŋ						Yes
SUBANUN: SINDANGAN																						Yes
BINUKID								ℓ														No
MANOBO: TIGWA								ℓ	ℓ													Yes
BLAAN			s																			Yes
TBOLI																						Yes
SAMA: DILAUT								ℓ														Yes
SANGIL (SANGIRÊ)																						No

6. Chart Three and Discussion--Vowel and Super-segmental Phonemes

Three-vowel systems are limited to the Central Philippine families. Almost fifty percent of the languages on the chart have a four-vowel system, the Meso Mindanaoan, Palawano, Southern Cordilleran, and Formosan families having four-vowel systems exclusively. Thirty percent of the languages have five- to seven-vowel systems, these being found in the Northern Cordilleran, South Mindanaoan, and Indonesian families. The Central and Nuclear Cordilleran language families are split with some four-vowel systems and some five- or six-vowel systems. Dumagat: Casiguran of the Northern Cordilleran family is the only language found to date with an eight-vowel system.

Another interesting feature of the Northern Cordilleran family is that the languages have significant vowel length only on /i/, /a/ and /u/ even though there are from two to five other vowels which have phonemic status. Tom Headland has analyzed Dumagat: Casiguran vowel length as predictable by phonemic stress, and Roy Mayfield is also working with a way to predict Agta vowel length. Nevertheless, it seems to be a distinctive characteristic of these languages to have length on only a portion of the vowel inventory.

One last feature of great interest is the portmanteau phones occurring in Subanun: Sindangan (see Brichoux, 1977, for full treatment). Vowel clusters are common in this language with all possible combinations being found except /a/ followed by /i/ or /u/. Instead, a phonetically distinct sound replaces these clusters. [ɛ:] is found in place of /ai/ and [ɔ:] for /au/.

CHART THREE: VOWEL AND SUPER-SEGMENTAL PHONEMES

	i	ɩ	e	ɛ	a	aʌ	ʌ	ə˂	ə	ə˃	ɨ	ɪ̈	ɩ̈	ë	ɛ̈	u	ʊ	o	ɔ	: length	ˊ stress	No. of indigenous vowels
IVATAN		i					a				ɩ̈	ɩ̈		ɩ̈		ʊ		ʊ				4
ATTA		i		e			a		a								u		o			5
ISNAG		i	ɛ		ʌ												u	ɔ				5
AGTA		i		e															o			6
DUMAGAT: CASIGURAN																						8
IFUGAO: BATAD		i		e	ʌ												u		o			6
ILOCANO			ɨ ɛ									ɨ					u	u				4
KALINGA: GUINAANG		i	ai				a										u		o			4
BALANGAO				e					ɨ a													6
BONTOC: EASTERN		i		e													u					5
KANKANAY: NORTHERN		i					a		i ɨ							o	o		o			4
KALLAHAN: KELEY-I		i		e			a										u					4

KALLAHAN: KELEY-I		i		e			a										u						4
IBALOI		i	i	i			ɨ a		ɨ							o	o						4
PANGASINAN		i	i				a					ï					u	u					4
TAGBANWA: CALAMIAN		i					a		ɨ									ʊ					4
BATAK		i					a		ɨ								o						4
AMBAL: TINA	ɩ		ɩ				a									o	o						3
TAGALOG		i	i	e			a										u	u	o				4
MASBATENYO		i	i	i			a									o	o		o				3
HILIGAYNON		i	i	e			a										u	u	o				3
TAUSUG		i		e			a					u	u				u	u	o				3
CEBUANO		i		e			a										u	u	o				3
MANSAKA		i														o	o						4
SUBANUN: SINDANGAN		i	i	ai			a		ɨ							u		u	au				4
BINUKID		i				a								ë			u	u					4
MANOBO: TIGWA		i					a				ë	ë					u						4
BLAAN		i		e					ɨ			u		o									7
TBOLI		i	ɛ						ʌ								u						7
SAMA: DILAUT	ɩ		ɛ		a^		ə	ə		ə						u		ɔ					6
SANGIL (SANGIRE)		i		e			a		ɨ			ɨ					u o						6

7. Areas for Further Research--Historical Processes

The role which phonology should play in determining the historical process of language change has not been thoroughly dealt with. To date most studies of language family relationships have been based on lexical data and cognate counts. This researcher does not know the extent to which phonetic similarities are a reliable guide to historical development or by what scientific criteria evaluation can be made. Nevertheless, it is apparent that the phonetic data do follow the divisions previously made on the basis of lexical data in a high percentage of the cases. If it is valid to assume that phonetic similarities indicate a common historical proto-language, then some of the languages in this study are suspect of being misplaced. This is not to assert that they are misplaced, only to suggest that more research is needed to account for the similarities.

One such language is Ivatan, which shows a much greater phonetic similarity with the southern Philippine languages than with any family in the north. Data on the Formosan languages was not available in order to determine to what extent Ivatan fits farther north. The closest fit on the charts would be somewhere in the East or Meso Mindanaoan families. These families share a four-vowel system with Ivatan: /a/, /i/, /u/, and the high central to back pepet. Tausug shares the /ñ/ and /dž/ phoneme of Ivatan, and Cebuano has both alveo-palatal affricates as portmanteau phones. These languages also share a common /h/ phoneme, which is fairly rare in the north. Chuck Walton (1977) has expressed a similar concern about the placement of Ivatan, saying that lexical-statistical data was not conclusive.

Kemp Pallesen has set forth a thorough treatment of the similarities found between Tausug and the Sama-Bajaw family. Added to this should be the unlikely partner, Atta, a Northern Cordilleran language. Atta is the only language in the north to have the [ɓ], [ř], [ɡ] allophone series of voiced stops which is found in Tausug and Sama: Dilaut. Atta shares the /dž/ phoneme with these languages and has a vowel system which is very similar to Sama: Dilaut with the exception that its pepet has become an allophone of /a/. Atta lacks, however, the /h/ and /ñ/ phonemes common to Tausug and Sama: Dilaut.

One last set of similarities is found between Kallahan: Keley-I and Ifugao: Batad. As mentioned before, these are the only two languages on the charts which lack an indigenous /s/ phoneme. They also both lack an indigenous /ř/ phoneme which is common to the other languages in their respective families. They contain an indigenous /h/ phoneme and a flap allophone, [ɾ], of the /ɾ/ phoneme which none of the other languages possess. Lastly, they share a back velar nasal, identical stop series, and do not front alveolar stops.

In this section I have not presented the differences which are sometimes as numerous as the similarities. My purpose is to lay a foundation for additional research in the area of phonology and language change.

APPENDIX A: Questionaire and List of Contributing Linguists

The following instructions, chart, and questions were sent to each of the contributing linguists listed on the last page of this appendix. The questionaire exemplified here is marked for Tausug and the answers are those returned to me by Seymour Ashley and Malcolm Armour. The only difference is in the lack of color on the chart, which made the originals easier to read. LQ stands for "language in question".

INSTRUCTIONS

The attached chart may need no alteration. I have not attempted an extremely fine level of phonetic distinction. If you find errors, they probably come from my misunderstanding the reports available in Manila. Please correct the chart according to how you are hearing the language today.

Chart labels should define point and manner of articulation. All phones use egressive lung air except the "implosives", which use ingressive pharynx air. These instructions (if they don't confuse you) along with the KEY and the questions on the back of the chart should help you to know what kind of information is needed.

Give special attention to phones which only occur in trade language loan words (TL). Phonology reports did not handle these in the same way, and I hope you can clear up some of the confusion. If a sound, which occurs only in loan words, has been analyzed as an allophone of an LQ phoneme, then it should be marked with a triangle Δ on the chart. If a sound, which occurs only in loan words, has been analyzed as a full phoneme, then it should be marked with brackets [ ] on the chart. Please re-mark any phones which I have checked if in fact they fit into one of these two TL catagories.

An "allophone set" (phones connected by green lines on the chart) is intended to represent a single phoneme in LQ. The most frequent allophone of an LQ phoneme is double checked in red. (This may be considered the "phonetic norm", often written up as an "elsewhere" statement in reports.) Other allophones are checked in green. Please check √ and connect with a line —— any allophones which I have left out of the set.

If a phone which you wish to include does not appear on the chart, check first to see if it is handled by the questions on the back of the chart. If not, you may write the phone's symbol on the chart, check it, and connect with a line to the proper set. Please describe such phones (point and manner of articulation, etc.), so that I know what your symbol means.

If I have made an error concerning which allophone is the "most frequent" (red double check), then check the correct one twice √√. If a phone is connected to the wrong set, put an X through my line and draw the correct line. Finally, if a phone which is checked does not occur in LQ at all, put an X through the phone.

CHART

CONSONOIDS		BILABIAL	LABIO-DENTAL	DENTAL-ALVEOLAR	RETROFLEX ALVEOLAR	PALATAL	VELAR	BACK VELAR	GLOTTAL
STOP	Vl.	p√√		t√√		ḱ	k	ḳ√√	ʔ√√
	Vd.	b√√		d√√			g√√	ḡ	
IMPLOSIVE	Vd.	bʕ		dʕ			gʕ		
FRICATIVE	Vl.	ꝑ	f	s√√	ṣ	ś	x	ẋ	h√√
	Vd.	ꝓ	v	z			ɣ		
AFFRICATE	Vl.	pꝑ		ts		tš			
	Vd.	bꝓ				dž			
LATERAL	Vd.			ɫ√√	ḷ				
LATERAL FLAP	Vd.			ɮ	ḷ				
FLAP	Vd.			ř√√	*Arabic loans only*				
NASAL	Vd.	m√√		n√√		ñ√√	ŋ√√	ŋ	
NON-SYLLABIC VOCOID		w√√		λ	ṛ	y√√			

VOCOIDS		FRONT unrd.	CENTRAL unrd.	BACK unrd.	BACK rd.
HIGH	Tense	i√√	ɨ√	ɯ	u√√
	Lax	ɪ√	ə	ɯ̈	ʊ√
MID	Tense	e		ë	o√
	Lax	ɛ	ʌ√		ɔ
LOW		æ	a√√		

KEY TO PREVIOUS CHART	IF WRONG! CORRECT BY:
✓✓ = most frequent allophone of set.	✓✓ most frequent allophone.
✓ = other allophones of set.	✓ additional allophones.
Δ = allophones found only in T.L. loans.	Δ around additional T.L. allophones.
— = allophones belonging to single set. (Above set is a phoneme in L.Q.)	— connecting phone to correct set.
[] = phonemes found only in T.L. loans.	[] around additional T.L. phonemes.

All the above may be deleted by placing X through phone or connecting line. Phones not on the chart may be written in and described on the back of this page.

QUESTIONS

Are your Dental Alveolar Contoids fronted (pronounced as in Spanish with the blade of the tongue behind the upper teeth rather than with the tongue tip on the alveolar ridge)?	YES	NO
Are your Velar Stops and Nasal pronounced farther back than English equivalents? If some are backed, but not all, please check to see that the chart shows this clearly for [ḳ], [g], [ŋ]. *Chart is correct*	YES	NO
Are there unreleased allophones of Vl. stops: [pˡ, tˡ, kˡ, ḳˡ]?	YES	NO
Are there unreleased allophones of Vd. stops: [bˡ, dˡ, gˡ, gˡ]?	YES	NO
Are there nasal released allophones of Vl. stops: [pᴺ, tᴺ, kᴺ, ḳᴺ]?	YES	NO
Are there nasal released allophones of Vd. stops: [bᵐ, dⁿ, gᵑ, gᵑ]?	YES	NO
Are there slightly aspirated allophones of Vl. stops: [pʰ, tʰ, kʰ, ḳʰ]?	YES	NO
If you have a flapped [ɾ̆], does it have a trilled allophone, [r̃]?	YES	NO

After comparing LQ with other Philippine languages, I have the following questions regarding phones which are conspicuously absent in my data.

Is d an allophone of ℓ ?	YES	NO	Is ṛ an allophone of ř ?	YES	NO
Is tš an allophone of ty?	YES	NO	Is ℓ an allophone of ř ?	YES	NO
Is ṣ̌ an allophone of s ?	YES	NO	Is υ an allophone of u ?	YES	NO
Is ḷ an allophone of ℓ ?	YES	NO			

Is f a phoneme occurring only in TL loans?	YES	NO	→	If not, does it occur as an allophone of an LQ phoneme? (Please mark chart according to the KEY)	→	YES NO
Is tš a phoneme occurring only in TL loand?	YES	NO	→		→	YES NO
Is v a phoneme occurring only in TL loans?	YES	NO	→		→	YES NO
Is e a phoneme occurring only in TL loans?	YES	NO	→		→	YES NO
Is o a phoneme occurring only in TL loans?	YES	NO	→		→	YES NO

If /e/ occurs, does it have [ɛ] as an allophone? YES NO

If /o/ occurs, does it have [ɔ] as an allophone? YES NO

Describe any phone symbols you have added to the chart:

Marc, length on /s/ manifested as [ss∿ts∿tš]
length on /dž/ manifested as [ddž]
length on /ñ/ manifested as [nñ]
} *dialectically determined*

Stress on vowels is not uniform occurring on final syllable but it is predictable and not written in orthography.

Seymour

List of Contributing Linguists

Language Name	Language Family	Linguist(s)
Agta	Northern Cordilleran	Roy Mayfield
Atta	Northern Cordilleran	Claudia Whittle
Balangao	Nuclear Cordilleran	Joanne Shetler
Batak	Palawano	Audrey Mayer and Rosemary Rodda
Binukid	Meso Mindanaoan	Ursula Post
Blaan	South Mindanaoan	Mary Rhea
Bontoc: Eastern	Nuclear Cordilleran	David Ohlson and Takashi Fukuda
Cebuano	East Mindanaoan	Elmer Wolfenden
Dumagat: Casiguran	Northern Cordilleran	Thomas Headland
Hiligaynon	Visayan	Elmer Wolfenden
Ibaloi	Southern Cordilleran	Lee Ballard
Ifugao: Batad	Central Cordilleran	Leonard Newell
Ilocano	Central Cordilleran	Richard Roe
Isnag	Central Cordilleran	Richard Roe
Ivatan	Formosan-Northern Philippine	Virginia Larson
Kalinga: Guinaang	Nuclear Cordilleran	Richard Gieser
Kallahan: Keley-I	Southern Cordilleran	Richard and Lou Hohulin
Kankanay: Northern	Nuclear Cordilleran	Judy Wallace
Manobo: Tigwa	Meso Mindanaoan	Clarice Strong
Mansaka	East Mindanaoan	Gordon Svelmoe
Masbatenyo	Visayan	Elmer Wolfenden
Sama: Dilaut	Indonesian-Southern Philippine	Kemp Pallesen
Sambal: Tina	Central Philippine	Hella Goschnick
Sangil (Sangire)	Indonesian-Southern Philippine	Kenneth Maryott
Subanun: Sindangan	Meso Mindanaoan	Robert Brichoux
Tagalog	Visayan	Elmer Wolfenden
Tagbanwa: Calamian	Palawano	Edward Ruch
Tausug	East Mindanaoan	Seymour Ashley and Malcolm Armour
Tboli	South Mindanaoan	Lillian Underwood and Doris Porter

APPENDIX B: Technical Descriptions of Phone Symbols

The following are the technical descriptions of the phone symbols used in the body of this paper and on the charts. All use egressive lung air with the exception of those marked "implosive", which use ingressive pharynx air. An asterisk marks those phones which occur on more than one chart or have two separate columns on the same chart.

Consonants:

	p	voiceless unaspirated bilabial stop
	t̪	voiceless unaspirated dental stop
	t	voiceless unaspirated alveolar stop
	k̪	voiceless unaspirated front velar stop
	k	voiceless unaspirated velar stop
	k̯	voiceless unaspirated back velar stop
	ʔ	glottal stop (or catch)
	p^y	voiceless bilabial palatalized stop
	k^y	voiceless velar palatalized stop
	k^h	voiceless aspirated velar stop
	b	voiced unaspirated bilabial stop
	d	voiced unaspirated alveolar stop
	g	voiced unaspirated velar stop
	g̯	voiced unaspirated back velar stop
	$b^ʃ$	voiced bilabial implosive
	$d^ʃ$	voiced alveolar implosive
	$g^ʃ$	voiced velar implosive
	ɸ	voiceless bilabial fricative
*	f	voiceless labiodental fricative
*	s	voiceless alveolar grooved fricative
*	ṣ	voiceless alveolar retroflexed grooved fricative

*	ṣ̌	voiceless fronted alveopalatal grooved fricative
	x	voiceless velar fricative
*	x̣	voiceless back velar fricative
*	h	voiceless pharyngeal (glottal) fricative
	ɓ	voiced bilabial fricative
	v	voiced labiodental fricative
	z	voiced alveolar grooved fricative
	ž	voiced alveopalatal grooved fricative
	ɣ	voiced velar fricative
	ɣ^{w}	voiced velar labialized fricative
	pɸ	voiceless bilabial affricate
	ts	voiceless alveolar grooved affricate
	tš	voiceless alveopalatal grooved affricate
	tš^{y}	voiceless alveopalatal palatalized grooved affricate
	bβ	voiced bilabial affricate
	dž	voiced alveopalatal grooved affricate
	m	voiced bilabial nasal
	n	voiced alveolar nasal
	ñ	voiced alveopalatal nasal
	ŋ	voiced velar nasal
	ŋ̣	voiced back velar nasal
*	ř	voiced alveolar flap
	r̄	voiced alveolar trill
	l	voiced alveolar lateral
	ḷ	voiced alveolar retroflexed lateral
*	ɺ	voiced alveolar lateral flap

ɺ̣ voiced alveolar retroflexed lateral flap

λ [ɨ] voiced non-syllabic high tense central unrounded vocoid

* ɾ̣ [ə̣] voiced non-syllabic retroflexed mid tense central unrounded vocoid

w [u] voiced non-syllabic high tense back rounded vocoid

y [ɪ] voiced non-syllabic high tense front unrounded vocoid

ÿ [ü] voiced non-syllabic high tense front rounded vocoid

Vowels

i	voiced high tense front unrounded vocoid
ɪ	voiced high lax front unrounded vocoid
e	voiced mid tense front unrounded vocoid
ɛ	voiced mid lax front unrounded vocoid
ɨ	voiced high tense central unrounded vocoid
ə	voiced mid tense central unrounded vocoid
ə<	voiced mid tense fronted central unrounded vocoid
ə>	voiced mid tense backed central unrounded vocoid
ʌ	voiced mid lax central unrounded vocoid
a	voiced low central unrounded vocoid
a^	voiced low raised central unrounded vocoid
ɯ	voiced high tense back unrounded vocoid
ɯ̈	voiced high lax back unrounded vocoid
ɤ̈	voiced mid tense back unrounded vocoid
ɔ̈	voiced mid lax back unrounded vocoid
u	voiced high tense back rounded vocoid
ʊ	voiced high lax back rounded vocoid
o	voiced mid tense back rounded vocoid
ɔ	voiced low tense back rounded vocoid
'	stress on syllable nucleus -- loudness and pitch
:	length on syllable nucleus

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